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10/612,330	07/02/2003	Esin Cubukcu	21980-04012	3819
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CALFEE HALTER & GRISWOLD, LLP 800 SUPERIOR AVENUE SUITE 1400 CLEVELAND, OH 44114			EXAMINER ALEJANDRO, RAYMOND	
			ART UNIT	PAPER NUMBER
			1745	
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			10/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/612,330

Applicant(s)

CUBUKCU ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/26/07 & 08/17/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5 and 7-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-5 and 7-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is responsive to the amendment filed 07/26/07 and 08/17/07. The applicant has overcome the objections and most of the 35 USC 112 rejections. The rejections under sections 102 and 103 have not yet been overcome. Refer to the foregoing amendment for specific details on applicant's rebuttal arguments and remarks. Therefore, the present claims as amended are finally rejected over the same art as set forth hereinbelow and for the reasons of record:

Election/Restrictions and Claim Disposition

1. This application contains claim 1 drawn to an invention nonelected with traverse in the reply filed on 06/26/06. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.
2. Claim 6 has been cancelled.

Oath/Declaration

3. The oath or declaration is still defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

- It does not state that the person making the oath or declaration believes the named inventor or inventors to be the original inventor or inventors of the subject matter which is claimed and for which a patent is sought.

Inventorship

4. The request for the deletion of an inventor in this nonprovisional application under 37 CFR 1.48(b) is deficient because:

It lacks the required fee under 37 CFR 1.17(i).

Drawings

5. The drawings were received on 07/26/07. These drawings are acceptable.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 22 still recites the limitation "the electrocatalyst layer" in line 6. There is insufficient antecedent basis for this limitation in the claim. Claim 4, from which claim 22 depend, does not recite "an electrocatalyst layer".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 4-5, 7-21 and 23-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Cubukcu et al 6132573.

The applied reference has common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The present application is directed to a method for manufacturing a ceramic composite oxygen or power generation cell wherein the disclosed inventive concept comprises the specific steps being carried to form the cell.

As to claim 4:

Cubukcu et al disclose ceramic composite electrolytic devices and method for manufacture thereof (TITLE/ABSTRACT), the device is an oxygen generating device (COL 14, line 65). Cubukcu et al teach placing a ceramic material 60 on a hole pattern section 80 of an alloy (COL 8, lines 34-65/ COL 13, lines 25-45/COL 10, lines 5-25/COL 9, lines 3-10) and firing them to form a ceramic composite material (COL 8, lines 34-65/ COL 13, lines 25-45/ COL 10, lines 5-25/COL 10, lines 44/COL 6, lines 37-55). Then, follows application of electrode layers (*the electrically conductive material*) including firing the whole composite material (COL 13, lines 40-65); thereafter, a bipolar foil 50 contacting/engaging the ceramic composite is

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provided (COL 14, lines 34-40/COL 6, lines 20-55/ COL 7, lines 30-37/ COL 9, lines 35-45/COL 5, lines 29-40) and an air tight seal (chamber) is formed (COL 10, lines 36-40/COL 14, lines 44-50).

As to claim 5:

Specifically, the application of the ceramic material by dipping on a hole pattern of a metal member is disclosed (COL 10, lines 5 & 20-23/ COL 12, lines 42-56/COL 8, lines 34-65/ COL 13, lines 25-45/COL 10, lines 5-25/COL 9, lines 3-10).

As to claim 6:

As disclosed by Cubukcu et al, an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50).

As to claim 7:

The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.*

As to claims 8 and 20:

The specific application of a catalyst material is disclosed (COL 6, lines 56-65)

As to claim 9:

Electrical contact layers 53 on the dimples of bipolar foil 50 are also disclosed (COL 15, lines 13-17). *These layers serve as the current collectors.*

As to claim 10:

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A seal coat is disclosed (COL 12, lines 5-10) as well as an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50) and a base coat slip (COL 13, lines 25-27).

As to claim 11:

Metallic cell frames are also taught (COL 14, lines 34-40 & COL 14, line 65 to COL 15, line 10/COL 7, lines 6-15).

As to claim 12:

Disclosed is that weld must provide a hermetic and permanent gas tight seal (COL 14, lines 60-65). *Thus, the welding step is disclosed.*

As to claims 13-14:

Dimple patterns by embossing are formed on the metallic bipolar foil (COL 5, lines 39-45/COL 5, lines 57-59/COL 4, lines 53-60). *They represent 3-D structures.*

As to claim 15:

A photolithographic member is disclosed as well as the formation of the hole pattern as results of photolithographic techniques (COL 9, lines 4-10/ COL 8, lines 35-62/COL 4, lines 59-61/COL 6, lines 1-2/COL 7, lines 24-26). Thus, the technique of photolithography is employed.

As to claims 16 and 30:

A seal coat is disclosed (COL 12, lines 5-10) as well as an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50) and a base coat slip (COL 13, lines 25-27).

Metallic cell frames are also taught (COL 14, lines 34-40 & COL 14, line 65 to COL 15, line 10/COL 7, lines 6-15).

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Dimple patterns by embossing are formed on the metallic bipolar foil (COL 5, lines 39-45/COL 5, lines 57-59/COL 4, lines 53-60). *They represent 3-D structures.*

Thickness of the metal member is 0.002 or 0.004 inches (COL 8, lines 41-43).

As to claims 17 and 31:

The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.*

Additionally, passages 42 for providing air into the device 10 and an oxygen output 44 for supplying oxygen from the device are disclosed (COL 4, lines 29-32).

Additionally, a resistance heat element 14 and an fan 30 are disclosed (COL 4, lines 20-30). Reference numeral 12b are arms (COL 15, lines 55-56).

As to claim 18:

Thickness of the metal member is 0.002 or 0.004 inches (COL 8, lines 41-43). The hole pattern has the shape of an hexagonal close pack cell (Col 4, lines 61-64/Col 8, lines 43-45).

As to claim 19:

Reference numeral 12b are arms to ensure oxygen egress (COL 15, lines 55-56/COL 6, lines 14-18). The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.*

Additionally, passages 42 for providing air into the device 10 and an oxygen output 44 for supplying oxygen from the device are disclosed (COL 4, lines 29-32).

As to claim 21:

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As best understood, it is contended that when the claimed device is used as an oxygen generating device, no fuel is required to be stored. Fuel is required when the device is used as a power generating device. Thus, the oxygen generation device of Cubukcu et al meets such a requirement.

As to claim 22:

Silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

As to claims 23 and 27:

Cubukcu et al disclose assembly of the oxygen generating device (COL 14, lines 65-67) providing at least a stack comprising two cells (COL 14, line 65 to COL 15, line 17) including respective anode sides and cathode sides (COL 15, lines 1-5) and respective electrical contact layers 53 (*the current collectors*) on the dimples of the bipolar foil 50, and the electrode layer or cermet 112 on both sides of the ceramic composite material. The cathode supported on member 60 contacts the contact layers 53 of the bipolar foil 50 of an adjacent cell 12 (COL 15, lines 10-35). Components are interconnected to form a gas-tight seal (COL 14, lines 44-48).

As to claims 24-26:

A stack of cells is provided within a thermal shell 24 (COL 16, lines 37-57/ COL 4, lines 22-25). In addition to that, it is contended that the combination of insulating material 28, heat element 14 including two heating plates 62" (COL 16, lines 38-55); stack duct member 140,

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exhaust duct 142 (COL 16, lines 58-65); and a layer of sealing material 168 (COL 17, lines 33-37) conform to a 3 layer structure providing a shell feature.

As to claim 28:

Resistance heat elements 14 are disclosed (COL 4, lines 20-30) and heat element 14 includes two heating plates 62" wherein one plate 62a" is engaged on top of the cell stack, the other is on the bottom (COL 16, lines 38-55).

As to claim 29:

A stack of cells is provided within a thermal shell 24 (COL 16, lines 37-57/ COL 4, lines 22-25). Resistance heat elements 14 are disclosed (COL 4, lines 20-30) and heat element 14 includes two heating plates 62" wherein one plate 62a" is engaged on top of the cell stack, the other is on the bottom (COL 16, lines 38-55). Respective electrical contact layers 53 (*the current collectors*) on the dimples of the bipolar foil 50 are disclosed (COL 15, lines 10-35).

Therefore, the present claims are anticipated.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu et al 6132573 as applied to claim 6 above, and further in view of LaConti et al 4528083.

Cubukcu et al is applied, argued and incorporated herein for the reasons expressed above.

Additionally, Cubukcu et al teaches that silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

However, the preceding prior art reference does not expressly disclose the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst.

LaConti et al discloses that it is well-known to use platinum-iridium oxide catalyst in electrodes of electrochemical cells and methods for gas generation utilizing catalyst and electrodes (COL 1, lines 36-50) because it provides improved performance and efficiency (COL 1, lines 36-50).

Compounding the aforementioned teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst of Cubukcu et al as taught by LaConti et al as LaConti et al teaches that it is

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well-known to use platinum-iridium oxide catalyst in electrodes of electrochemical cells and methods for gas generation utilizing catalyst and electrodes because it provides improved performance and efficiency.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu et al 6132573 as applied to claim 6 above, and further in view of Janssen et al 4900406.

Cubukcu et al is applied, argued and incorporated herein for the reasons expressed above.

Additionally, Cubukcu et al teaches that silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

However, the preceding prior art reference does not expressly disclose the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst.

Janssen et al makes known that electrochemical cells such as power generating fuel cells can use as a catalyst an oxide form of noble metal such as ruthenium oxide (COL 3, lines 52-65).

Compounding the aforementioned teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst of Cubukcu et al as taught by Janssen et al as Janssen et al teaches that such a specific catalyst material enhances catalytic activity of the electrode and improve fuel cell characteristics such as current density and electrical conductivity.

Response to Arguments

15. Applicant's arguments filed 07/26/07 and 08/17/07 have been fully considered but they are not persuasive.

16. Applicant's contention that the statement or request under 37 CFR 1.48(b) to correct inventorship in the present patent application obviates all prior art rejections is insufficient to overcome the above rejections because:

The request for the deletion of an inventor in this nonprovisional application under 37 CFR 1.48(b) is deficient because it lacks the required fee under 37 CFR 1.17(i). See ***MPEP 201.03 Correction of Inventorship in an Application; 37 CFR 1.48(b) Correction of Inventorship in a patent application and 37 CFR 1.17(i) Patent Application and Reexamination Processing Fee.***

Thus, applicant's petition under 37 CFR 1.48(b) filed 08/17/07 is DISMISSED because the proper petition or processing fee as required under 37 CFR 1.17 has not been submitted.

17. With respect to the defective declaration, it is noted that ***35 U.S.C. 115. Oath of applicant*** establishes: "*The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen.*" and ***37 CFR 1.63. Oath or declaration*** sets forth: "*State that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought*". Thus, applicant's metaphysical explanation has been considered but it is still ineffective to overcome

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non-metaphysical matter as established by operation of patent law and rules. See MPEP §§ 602.01 and 602.02.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
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